

WHAT IS CLAIMED IS:

1. A data relay unit comprising:

a plurality of send/receive means for sending and receiving data frames each of which is formed by adding a header including a data type which identifies content of a data body to the data body according to a predetermined protocol so that the data body is usable in a predetermined destination, wherein a data frame is received by one of the send/receive means and sent by another one of the send/receive means,

characterized by further comprising:

destination table means for identifying the send/receive means which sends the received data frame based on a data type of the received data frame;

header table means for providing header information based on the data type of the received data frame; and

header processing means for forming a header corresponding to the data type of the received data frame by using the header information received from the header table means and adding the formed header to the data body of the received data frame,

wherein the combined header and data body is outputted to the send/receive means identified by the destination table means.

2. A data relay unit as in claim 1, wherein:

the header table means is provided for each of the send/receive means; and

each of the header tables provides header information according to a communication protocol according to which a corresponding send/receive means sends a data frame.

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3. A multiplex communication system comprising:
a data relay unit as in claim 1;
communication lines connected to the respective send/receive means; and
nodes which are connected to the communication lines and send and receive data frames.
 4. A data relay unit as in claim 1,
wherein the header processing means is provided for each of the send/receive means.
 5. A data relay unit as in claim 1,
wherein each of the identified send/receive means forms a data frame by adding the overhead portion to the combined header and data body received from the header processing means, and sends the formed data frame.
 6. A multiplex communication system as in claim 3,
wherein each of the communication lines employs different communication protocol.
 7. A multiplex communication system as in claim 3,
wherein some of the communication lines employ the same

communication protocol.

8. A multiplex communication system as in claim 3,
wherein all the communication lines employ the same
communication protocol.

9. A multiplex communication system as in claim 3,
wherein nodes are ECUs in a vehicle.

10. A method of relaying data in a multiplex communication
system having a plurality of networks, each network having at
least one electronic control unit, the method comprising the
steps of:

receiving a data frame from a first one of the networks,
the data frame being formed with a data body and a header that
includes a data type therein;

determining a second one of the network to which the
received data frame is sent by referring to a destination table
stored in a memory, the destination table defining a
predetermined relation between data types of receive data and
networks to which received data frames are sent;

adding a header information to a data body of the received
data frame by referring to a header table stored in the memory,
the header table defining header information which are added
in correspondence with the data types of receive data frame,
respectively; and

sending the combined data body and the header information

to the second network.

12. A method of relaying data as in claim 11, wherein:

the first network and the second network are operable under different communication protocols from each other;

the destination table defines the second network by way of communication protocols; and

the header table defines the header information in correspondence with the communication protocols.

13. A method of relaying data as in claim 11, wherein:

the networks are provided in a vehicle; and

the memory is provided separately from the electronic control unit of each network.